PTO/SE/08a (08-03)

Approved for use through 07/31/2006, OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

	Application Number	10748587
INFORMATION DISCUSSION	Filing Date .	2003-12-30
INFORMATION DISCLOSURE	First Named Inventor	ROBERT STEIFERWALD, ET AL.
STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Art Unit	1709
(Total of the first of the fir	Examiner Name	Jack Smith
	Attorney Docket Numb	er 132743

									•	
					U.S	.PATENTS				
Examine Initial*	r Cite No	Patent Number	Kind Code ¹	Issue	Date	Name of Pa of cited Doc	atentee or Applicant current	Relev	es,Columns,Lines when vant Passages or Rela es Appear	re ovant
	1									-
If you wis	sh to a	dd additional U.S. Pate	ent citatio	n inforn	nation p	lease click the	Add button.		•	
			U.S.P	ATENT	APPLI	CATION PUB	LICATIONS			
Examine Initiai*	Cite No	Publication Number	Kind Code ¹	Public Date	ation	Name of Pai of cited Doc	of cited Document		Pages,Columns,Lines where Relevant Passages or Relevar Figures Appear	
	1									
if you wis	h to a	dd additional U.S. Publi	shed Ap	plication	citatio	n information	please click the Add	buttor	٦.	
				FORE	GN PA1	ENT DOCUM	IENTS			
Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ² i		Kind Code ⁴	Publication Date	Name of Patentee Applicant of cited Document	or J	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T5
	1									
If you wist	to ad	ld additional Foreign Pa	atent Doc	ument	citation	information pl	ease click the Add b	utton		
						RATURE DO				$\neg \neg$
	examiner Cite Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item									

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number		10748587			
Filing Date		2003-12-30			
First Named Inventor	ROB	ERT STEIFERWALD, ET AL.			
Art Unit	· · · · · · · · · · · · · · · · · · ·	1709			
Examiner Name		Jack Smith			
Attorney Docket Numb	er	132743	•		

$\overline{}$,									
JS 1 K. FURUKAWA, et al. "Transformer-less Inverter for Photovoltaic Power System", Inst. of Elec. Eng. of Japan, Ind. Appl. Soc., transaction No. 77, pp. 217-220 (1998).											
If you wis	If you wish to add additional non-patent literature document citation information please click the Add button										
			EXAMINER SIGNATURE								
Examiner	Signa	ture	/Jackson Smith/	Date Considered	02/27/200	7					
*EXAMINI citation if r	ER: Ini	itial if confor	reference considered, whether or not citation is in conformation and not considered. Include copy of this form with	ance with MPEP 609.	Draw line through a						
Ottalio alo ST.	ument b	or Japa ly the s	O Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter officeness patent documents, the indication of the year of the reign of the Emperopriate symbols as indicated on the document under WIPO Standard Son is attached.	eme must prepent the sort	ol cumber of the extent does						

PTO/SB/08a (08-03)

Approved for use through 07/31/2006, OMB 0551-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information untess it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application Number	10748587
	Filing Date	2003-12-30
	First Named Inventor	Robert Steigerwald, et al.
(Not for submission under 37 CFR 1.99)	Art Unit	1709
,	Examiner Name	Jack Smith
	Attorney Docket Numb	er 132743

		· · · · · · · · · · · · · · · · · · ·			<u>U.S</u>	S.PATENTS				
Examine Initial*	Cite No	Patent Number	Kind Code	Issue	Date		Name of Patentee or Applicant of cited Document		es,Columns,Lines who vant Passages or Rel res Appear	evan
	1					·				
If you wis	sh to a	I dd additional U.S. Pate	ent citatio	n inforr	nation p	lease click th	e Add button.			
						CATION PUE				
Examiner Initial*	Cite No	Publication Number	Code Date of cited Dogument Relevan		Name of Patentee or Applicant of cited Document		Pages,Columns,Lines where Relevant Passages or Relevan igures Appear			
	1	·								-
If you wis	h to a	dd additional U.S. Publ	ished App	olication	n citatio	n information	please click the Add	buttor	า.	
				FOREI	GN PAT	ENT DOCUM	MENTS			
Examiner Initial*	Cite No	Foreign Document Number³	Country Code ² i		Kind Code ⁴	Publication Date	Applicant of cited where Relevant		Passages or Relevant	1
	1									
f you wish	to ad	d additional Foreign Pa	atent Doc	ument	citation	information pl	ease click the Add b	utton		l
						RATURE DO				
	No 1	Include name of the au (book, magazine, Journ publisher, city and/or c	ıaı, senaı,	sympo	osium. c	atalog, etc), d	the article (when applate, pages(s), volun	propria ne-issu	ite), title of the item ue number(s),	T 6

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	10748587	
Filing Date	2003-12-30	
First Named Inventor	Robert Steigerwald, et al.	
Art Unit	1709	
Examiner Name	Jack Smith	
Attorney Docket Number	er 132743	

JS	1	Transfo Twenty 1994, F	HARA, H.; KIMOTO, K.; ITAMI, T.; AMBOU, T.; OKADO OSHI, M.; SATO, Y.; "Development of a Residential Us Immer-less Circuit-Development Aspects", Photovoltaic I Fourth; IEE Photovoltaic Specialists Conference-1994, ages: 1216-1218 vol. 1	se, Utility Interactive PV Inverter Energy Conversion, 1994., Confe , 1994 IEE First World Conference	With Isolation erence Record of the second on, Vol: 1, 5-9 Dec.	
If you wis	h to ac	d additi	onal non-patent literature document citation inform	nation please click the Add hi	/tton	
			EXAMINER SIGNATI	URE		
Examiner	Signa	ture	/Jackson Smith/	Date Considered	20/07/202	
*EXAMINI citation if i	ER: Ini	tial if rei conforma	erence considered, whether or not citation is in co ance and not considered. Include copy of this for		02/27/2007 Draw line through a applicant.	
See Kind C Standard ST.	odes of	USPTO P	atent Documents at www.USPTO.GOV or MPEP 901.04. 2 Er see patent documents, the indication of the year of the reign of the operate symbols as indicated on the document under WIPO Statlached.	nter office that issued the document	bu the true letter and gran	PO ment. nere if

PTO/SB/08B (05-03)

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

132743/068709-039

Substitute for form 1449BPTO

SUPPLEMENTAL
INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

Complete if Known

Application Number 10/748,587

Filling Date 12/30/2003

First Named Inventor Robert Steigerwald

Group Art Unit 17 0 9

Examiner Name Jack Smith

Attorney Docket Number

Sheet

	NON-PATENT LITERATURE DOCUMENTS							
Examiner Initials								
JS	1	R.L. STEIGERWALD, A. FERRARO, R. E. TOMPKINS, "Investigation of a Family of Power Conditioners Integrated into the Utility Grid (Residential Power Conditioner), Contractor Report, Report No. 81CRD259, October 1981						
		·						
		·	•					
·		·						

Examiner		Date	
Signature	/Jackson Smith/	Considered	02/27/2007
	,	Toonsidered	02,21,2001

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

'Applicant's unique citation designation number (optional). ²Applicant is to place a check mark here if English Language Translation is attached. This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

PTO/SB/08a (05-03) Approved for use through 05/31/2003. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE Under the Paperwork Reduction Act of 1995, no persons are

Substitute for	Substitute for form 1449A/PTO				Complete if Known		
				Application Numb r	Not Yet Assigned		
INFORM	NOITAN	DISCLO	DSURE	Filing Date	Simultaneously Herewith		
STATE				First Named Inventor	Robert Steigerwald		
				Group Art Unit	T1709		
(Use as	(Use as many sheets as necessary)			Examiner Name	Jack Smith		
Sheet	1	of	2	Attorney Docket Number	132743/068709-039		

			U	.S. PATENT DO	CUMENTS	
Examiner Initials	Cite No.1	Document Number Kind Code ² Number (if known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
JS	1	US-4,362,950		12-07-1982	Turner	
JS	2	US-4,775,923		10-04-1988	Schmid et al.	
JS	3	US-5,270,913		12-14-1993	Limpaecher	
JS	4	US-5,977,659		11-02-1999	Takehara et al.	
JS	5.	US-6,107,560		08-22-2000	Takehara et al.	
JS	6	US-2003/0010373	A1	01-16-2003	Tsuzuki et al.	
JS	7	US-6,643,156	B2	11-23-2003	Zubieta	
		US-				
		US-				
		US-				
		US-				
		US-				
		US-				•
		US-				
		US-				
		US-				
		US-				
		US-				· · · · · · · · · · · · · · · · · · ·

				FOREIGN	PATENT DOC	UMENTS		
Examiner Initials	Cite No. ¹	Foreig	gn Patent Do	Kind Code ⁵	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	
					-			\vdash

Examiner Signature	/Jackson Smith/	Date Considered	02/27/2007
	7 *************************************		

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.usplo.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁹Applicant is to place a check mark here if English Language Translation is attached. This collection of Information is required by 37CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450. P.O. Box 1450, Alexandria, VA 22313-1450.

Approved for use through 05/31/2003. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paper work Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number

Substitute for form 1449B/PTO				Complete if Known		
				Applicati n Number	Not Yet Assigned	
INFORM	IATION	DISCLO	OSURE	Filing Date	Simultaneously Herewith	
STATEMENT BY APPLICANT				First Named Inventor	Robert Steigerwald	
OTATEMENT BY AFFEIGANT				Group Art Unit	1709	
(Use as many sheets as necessary)		Examiner Name	Jack Smith			
Sheet	2	of	2	Attorney Docket Number	132743/068709-039	

3 : 7

NON-PATENT LITERATURE DOCUMENTS						
Examiner Initials	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²			
JS	1	DR. ROBERT H. WILLS, P.E., "The Interconnection of Photovoltaic Power Systems with the Utility Grid: An Overview for Utility Engineers," SAND94-1057, Unlimited Release, Printed June 1994.				
JS	2	DIRK SCHEKULIN, PETER KUBER and OLAF SCHANZ, "Modular Transformerless Inverts for Grid Connection of Large PV Generators," <i>EuroSun</i> '96, pp. 868-871.				
JS	3	MARTINA CALAIS and LAWRENCE J. BORLE, "Control Aspects of a Transformerless Five Level Cascaded Inverter Based Single Phase Photovoltaic System," <i>T. IEE Japan</i> , Vol. 121-D, No. 4, 2001, pp. 437-444.				
JS	4	FRANCISCO CANALES, PETER BARBOSA and FRED C. LEE, "A Wide Input Voltage and Load Output Variations Fixed-Frequency ZVS DC/DC LLC Resonant Converter for High-Power Applications," IEEE IAS Rec., 2002., pp. 2306-2313.				
JS	5	FRANCISCO CANALES, PETER BARBOSA, CARLOS AGUILAR and FRED C. LEE, "A High-Power Density DC/DC Converter for High-Power Distributed Power Systems," <i>IEEE</i> , copyright 2003, pp. 11-18.				
JS	6	H. HINZ, P. MUTSCHLER and M. CALAIS, "Control of a single phase three level voltage source inverter for grid connected photovoltaic systems," Power Conversion Topic: 4.				
JS	7	H. HINZ and P. MUTSCHLER, "Voltage Source Inverters for Grid Connected Photovoltaic Systems."				
JS	8	T. SPOONER, O. ARTEAGA and M. CALAIS, "Towards A Meaningful Standard For PV Array Installation In Australia."				
JS	9.	GEERT J. NAAIJER, *Three-level inverter conserves battery power,* Laboratoires d'Electronique et de Physique Appliquee, Limeil-&-Brevannes, France.				
JS	10	TED SPOONER, GEOFF STAPLETON, GEOFF WEBB & OSCAR ARTEAGA, "EL-42-Renewable Energy Power Supply Systems & Equipment," PV Array – Standard for Australia Workshop," Feb. 2003, pp. 1-17.				

Examiner		Date	
Signature	/Jackson Smith/	Considered	02/27/2007
- 3	/ Cuchibon Balton/	Considered	. 02/21/2001

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Occuments at www.uspto.gov or MPEP 901.04. ¹Enter Office that issued the document, by the two-letter code (WiPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.18 if possible. ⁰Applicant is to place a check mark here if English Language Translation is attached. This collection of information is required by 37CFR 1.97 and 1.98. The Information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450. P.O. Box 1450, Alexandria, VA 22313-1450.